

REMARKS

In the Office Action dated June 11, 2009 and marked final, the Examiner rejects claims 1-19 under 35 U.S.C. § 103(a). With this Amendment, claims 1-18 are amended. Claims 19-25 are added, and no claims are canceled. After entry of this Amendment, claims 1-25 are pending in the Application. Reconsideration of the Application as amended is respectfully requested.

Applicants thank the Examiner for courtesies extended to the undersigned during a telephonic interview on August 4, 2009. During that interview, the rejection of the independent claims, mainly claim 1, was discussed. Applicants presented proposed amendments to claim 1, and the Examiner expressed that the amendments overcame the current rejections and proposed additional clarifying amendments. The Examiner also stated that the amendments would require new search and consideration and so were not suitable for entry after a final rejection. Accordingly, Applicants are submitting the amendments to the independent claims (with additional clarifications over those discussed in the teleconference), and conforming amendments to the dependent claims, with the filing of a Request for Continued Examination.

The Examiner rejects claims 1, 3-7, 9-14 and 16-19 under 35 U.S.C. §103(a) as being unpatentable over Kato et al. (US 6,082,482) in view of Serizawa et al. (US 5,347,458). The Examiner points to various blocks in each of FIGS. 4, 7 and 10 for allegedly teaching the use of steering angle, steering angular velocity and steering angle acceleration. In the hands-on state, only FIG. 7 allegedly contains all three terms in blocks S56, S60 and S66. In the hands-off state, the Examiner states that FIG. 5 uses a steering angle term, and the coefficients for the other terms can be considered set to 0, since they are not used in the hands-off state. (Office Action, pp. 5-6). The Examiner further states that, even if the hands-on and hands-off states are considered different formulas in Kato et al., it would be obvious to use one equation with position, velocity and acceleration terms in view of Serizawa et al. Further, the Examiner rejects dependent claims 2, 8 and 15 under 35 U.S.C. §103(a) as being unpatentable over Kato et al. in view of Higashira et al. (US 5,908,457).

The Examiner's rejection relies on reasoning that the figures of Kato et al. are all "parts" of a formula for calculating the reaction force, which is contrary to the clear and

definite meaning of the word “terms” when referring to a “formula.” However, to further prosecution in this application, Applicants have amended each of claims 1, 7, 13 and 14 to recite that a value of the control signal is equal to a summation of a plurality of terms, the plurality of terms including at least a steering angle term $K_p\theta$, a steering angle velocity term $K_d\dot{\theta}/dt$ and a steering angle acceleration term $K_{dd}\ddot{\theta}/dt^2$; wherein θ is a steering angle of the steering wheel, K_p is a steering angle gain, K_d is a steering angle velocity gain and K_{dd} is a steering angle acceleration gain. Other clarifying changes are made.

Among other differences, Applicants respectfully submit that none of the cited art, either alone or in any permissible combination, teach or suggest a value of a control signal used to apply a steering reaction force to the steering wheel equal to such a summation and a controller configured to reduce the steering reaction force applied if the hands-off state is indicated relative to the steering reaction force applied if the hands-on state is indicated by using a value of at least one of a coefficient and a gain for at least one of the plurality of terms in the summation if the hands-off state is indicated that is different from a value used if the hands-on state is indicated. For these reasons, among others, claims 1-25 are allowable over the cited references.

Applicants have added dependent claims 19-25 to further define inventive features of the invention. Applicants respectfully submit that no features of any of these claims are taught or suggested by the cited references.

It is submitted that this Amendment has antecedent basis in the Application as originally filed, including the specification, claims and drawings, and that this Amendment does not add any new subject matter to the Application. Consideration of the Application in view of these comments is requested. It is submitted that the Application is in suitable condition for allowance; notice of which is requested.

If the Examiner feels that prosecution of the present application can be expedited by way of an Examiner's amendment, the Examiner is invited to contact the undersigned at the telephone number listed below.

Respectfully submitted,

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